

Service Manual

AV Terminal Box

TY-TB10AV
TY-TB10AVC



Specifications

Dimensions (W × H × D)

180 mm × 44.5 mm × 74.8 mm

180 mm × 44.5 mm × 133.5 mm (With cable cover)

Mass

AV Terminal BOX : 910 g

Cable cover : 52 g

⚠ WARNING

This service information is designed for experienced service personnel only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential danger in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced service personnel. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

CONTENTS

	Page		Page
1 Safety Precautions	2	6 Circuit Board Layout	7
1.1. General Guidelines	2	6.1. AV-Board	7
2 Prevention of Electrostatic Discharge (ESD) to		7 Schematic Diagram	8
Electrostatically Sensitive (ES) Devices	3	7.1. Schematic Diagram Notes	8
3 About lead free solder (PbF)	4	7.2. AV-Board Schematic Diagram	10
4 Connections & Installing the AV terminal box	5	8 Exploded Views & Replacement Parts List	11
5 Disassembly Instructions	6	8.1. Packing Exploded Views	11
5.1. Remove the rear metal.	6	8.2. Replacement Parts List Notes	12
5.2. Remove the AV-Board	6	8.3. Mechanical Replacement Parts List	13
5.3. Remove the front metal and the front panel	6	8.4. Electrical Replacement Parts List	14

1 Safety Precautions

1.1. General Guidelines

1. When conducting repairs and servicing, do not attempt to modify the equipment, its parts or its materials.
2. When wiring units (with cables, flexible cables or lead wires) are supplied as repair parts and only one wire or some of the wires have been broken or disconnected, do not attempt to repair or re-wire the units. Replace the entire wiring unit instead.
3. When conducting repairs and servicing, do not twist the Faston connectors but plug them straight in or unplug them straight out.
4. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
5. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
6. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

1.1.1. Leakage Current Cold Check

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between $1\text{M}\Omega$ and $5.2\text{M}\Omega$.

When the exposed metal does not have a return path to the chassis, the reading must be ∞ .

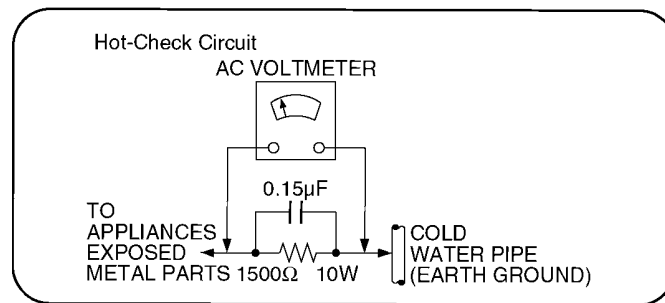


Figure 1

1.1.2. Leakage Current Hot Check (See Figure 1.)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 1.5kΩ, 10 watts resistor, in parallel with a 0.15µF capacitors, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in Figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 volts RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 milliamp. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

2 Prevention of Electrostatic Discharge (ESD) to Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electrostatic discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static (ESD protected)" can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

Caution

Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise ham less motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by \triangle in the schematic diagrams, Exploded Views and replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

3 About lead free solder (PbF)

Note: Lead is listed as (Pb) in the periodic table of elements.

In the information below, Pb will refer to Lead solder, and PbF will refer to Lead Free Solder.

The Lead Free Solder used in our manufacturing process and discussed below is (Sn+Ag+Cu).

That is Tin (Sn), Silver (Ag) and Copper (Cu) although other types are available.

This model uses Pb Free solder in it's manufacture due to environmental conservation issues. For service and repair work, we'd suggest the use of Pb free solder as well, although Pb solder may be used.

PCBs manufactured using lead free solder will have the PbF within a leaf Symbol PbF stamped on the back of PCB.

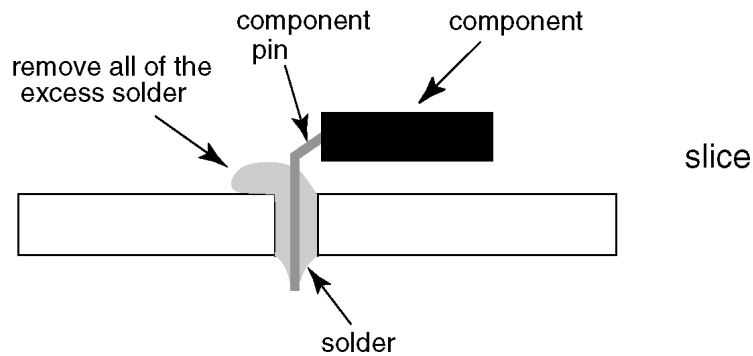
Caution

- Pb free solder has a higher melting point than standard solder. Typically the melting point is 50 ~ 70 °F (30~40°C) higher. Please use a high temperature soldering iron and set it to 700 ± 20 °F (370 ± 10 °C).

- Pb free solder will tend to splash when heated too high (about 1100 °F or 600 °C).

If you must use Pb solder, please completely remove all of the Pb free solder on the pins or solder area before applying Pb solder. If this is not practical, be sure to heat the Pb free solder until it melts, before applying Pb solder.

- After applying PbF solder to double layered boards, please check the component side for excess solder which may flow onto the opposite side. (see figure below)



Suggested Pb free solder

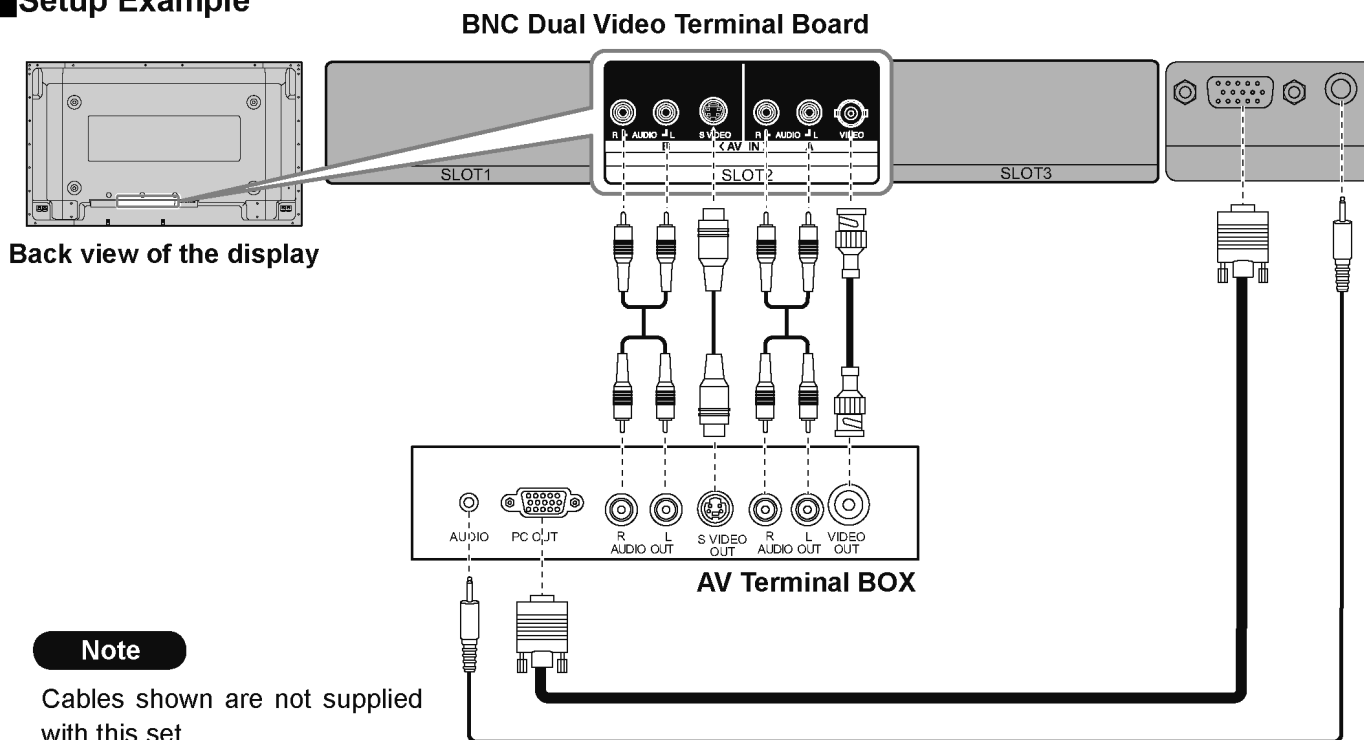
There are several kinds of Pb free solder available for purchase. This product uses Sn+Ag+Cu (tin, silver, copper) solder. However, Sn+Cu (tin, copper), Sn+Zn+Bi (tin, zinc, bismuth) solder can also be used.

0.3mm X 100g	0.6mm X 100g	1.0mm X 100g

4 Connections & Installing the AV terminal box

Connections

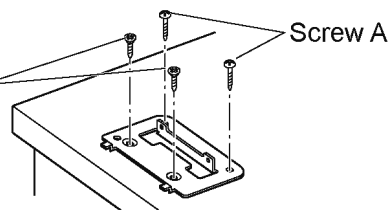
■ Setup Example



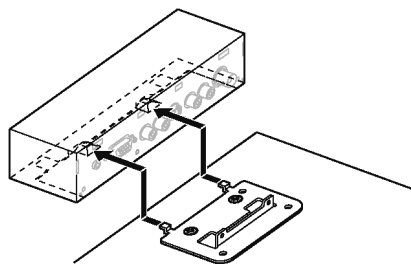
Installing the AV terminal box

1 Attach the mounting brackets

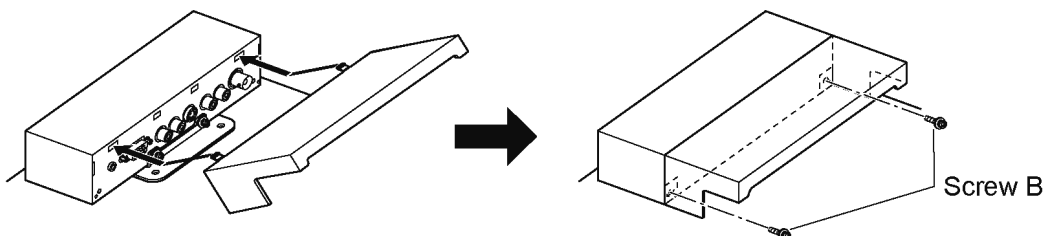
Flat countersunk head screw



2 Secure the AV terminal box.



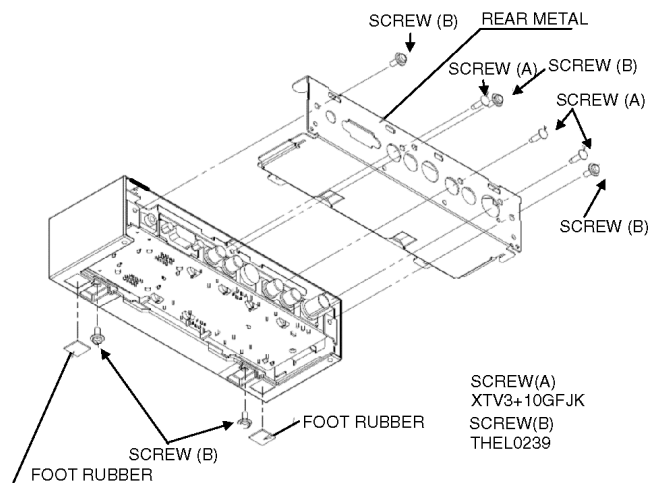
3 Attach the cable cover.



5 Disassembly Instructions

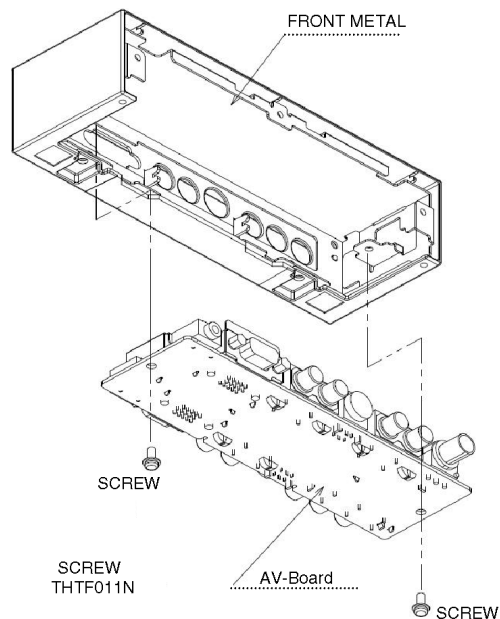
5.1. Remove the rear metal.

1. Remove the screw (A) and the screw (B).
2. Remove the rear metal.



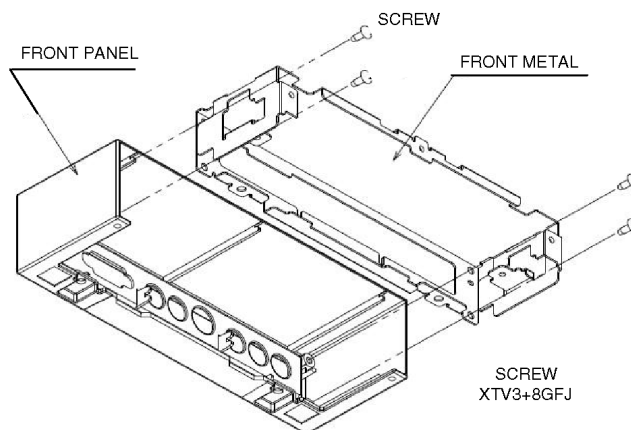
5.2. Remove the AV-Board

1. Remove the screw.
2. Remove the AV-Board.



5.3. Remove the front metal and the front panel

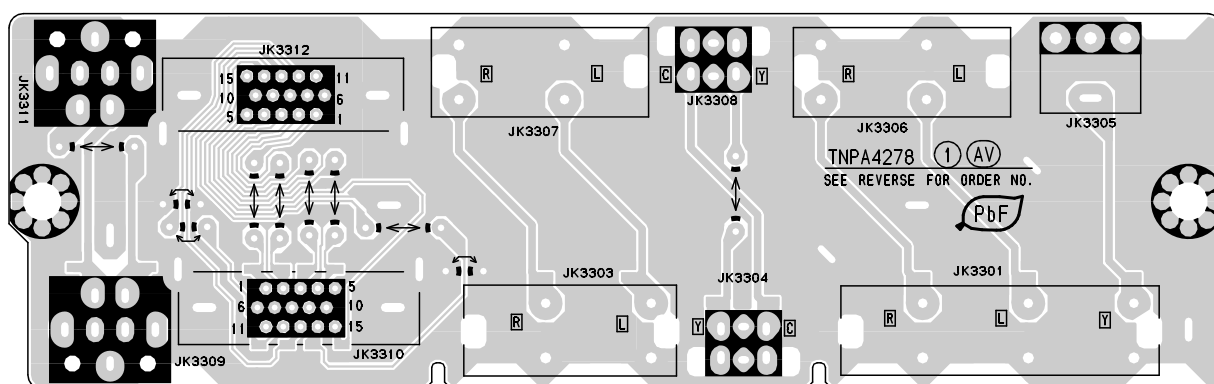
1. Remove the screw.
2. Remove the front metal and the front panel.



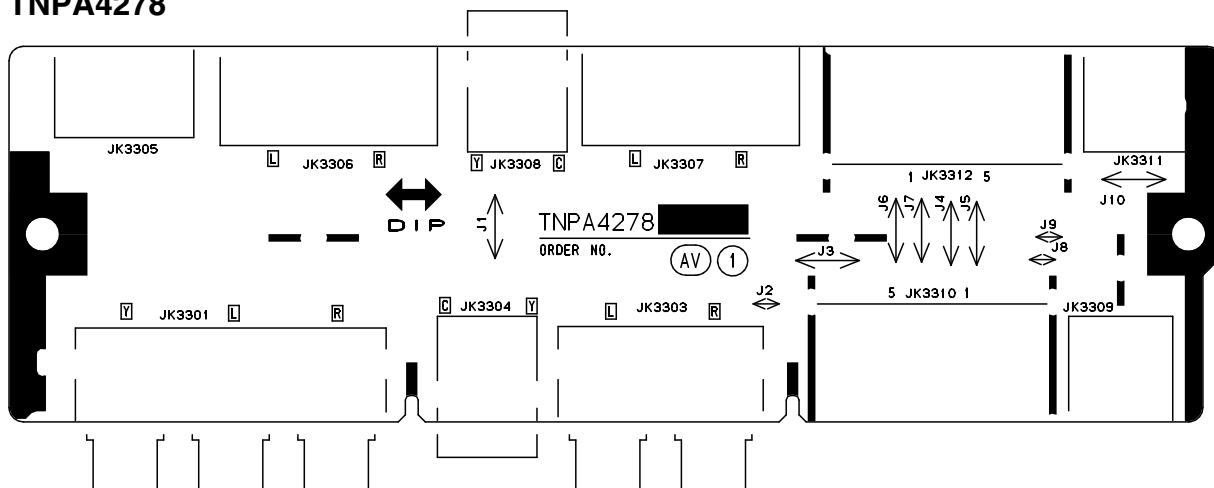
6 Circuit Board Layout

6.1. AV-Board

AV-BOARD (FOIL SIDE) TNPA4278



AV-BOARD (COMPONENT SIDE) TNPA4278









7 Schematic Diagram

7.1. Schematic Diagram Notes

Important Safety Notice

Components identified by \triangle mark have special characteristics important for safety.
When replacing any of these components, use only manufacture's specified parts.

Notes:

1. **Resistor**
Unit of resistance is OHM [Ω] (K=1,000, M=1,000,000).
2. **Capacitor**
Unit of capacitance is μ F, unless otherwise noted.
3. Coil
Unit of inductance is μ H, unless otherwise noted.
4. Test Point
 : Test Point position
5. Earth Symbol
 : Chassis Earth (Cold)  : Line Earth (Hot)
6. Voltage Measurement
Voltage is measured by a DC voltmeter.
Conditions of the measurement are following:
Receiving Signal Colour Bar signal
All customer's controls Maximum positions
7. When arrow mark () is found, connection is easily found from the direction of arrow.
8. Indicates the major signal flow. : Video  Audio 
9. This schematic diagram is the latest at the time of printing and subject to change without notice.

Remarks:

1. The Power Circuit contains a circuit area which uses a separate power supplier to isolate the earth connection.

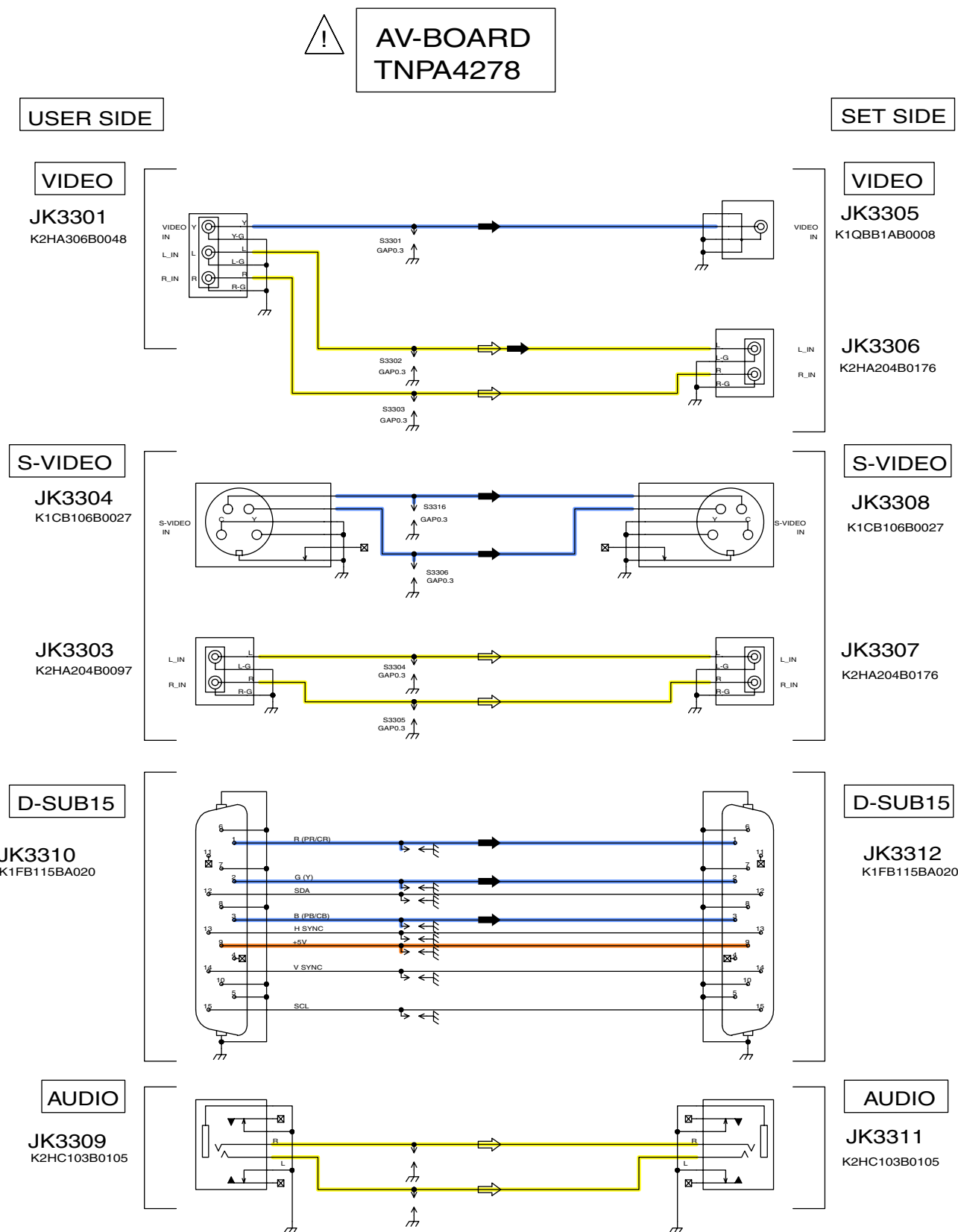
The circuit is defined by HOT and COLD indications in the schematic diagram. Take the following precautions.

All circuits, except the Power Circuit, are cold.

Precautions

- a. Do not touch the hot part or the hot and cold parts at the same time or you may be shocked.
- b. Do not short- circuit the hot and cold circuits or a fuse may blow and parts may break.
- c. Do not connect an instrument, such as an oscilloscope, to the hot and cold circuits simultaneously or a fuse may blow.
Connect the earth of instruments to the earth connection of the circuit being measured.
- d. Make sure to disconnect the power plug before removing the chassis.

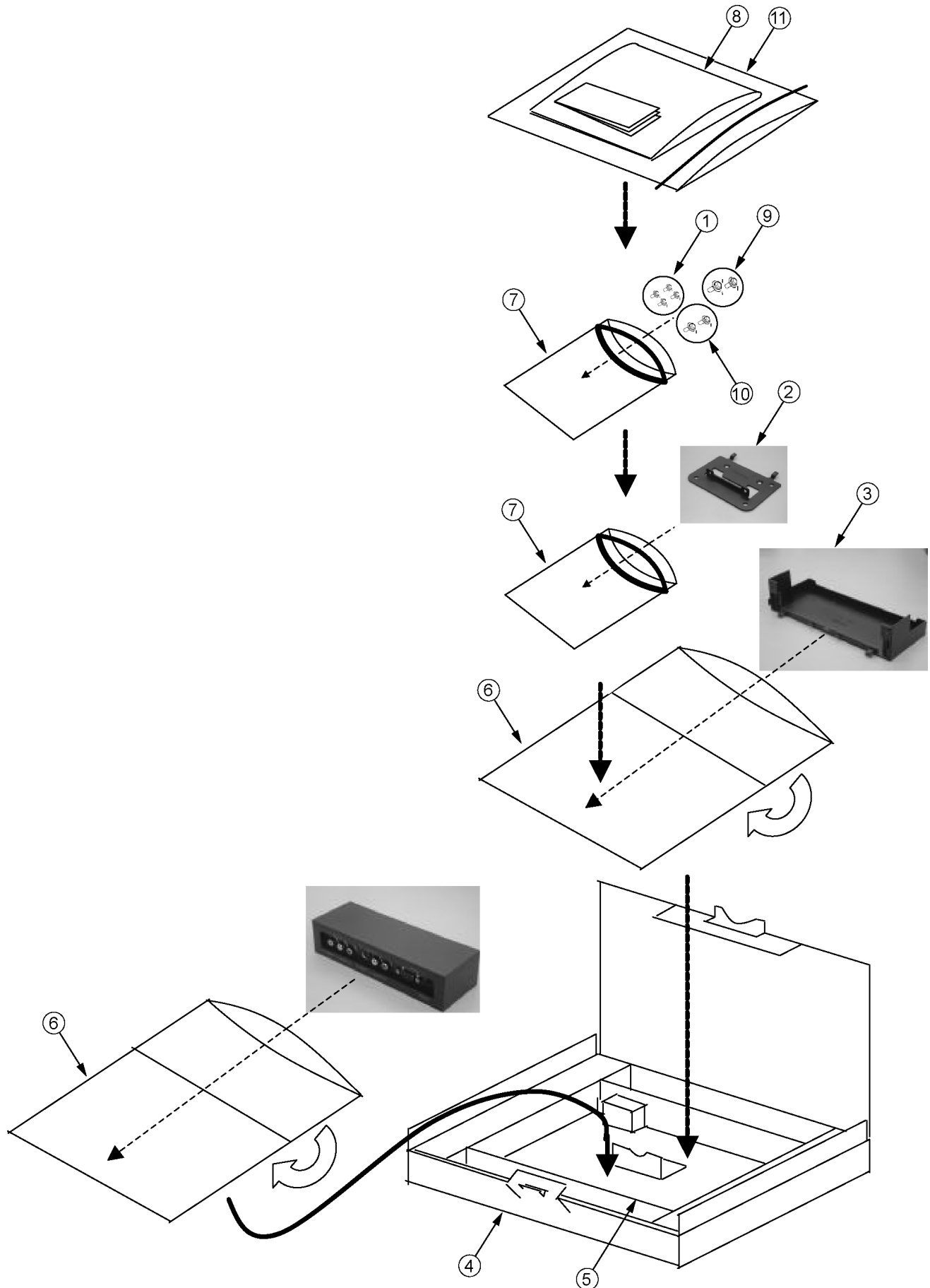
7.2. AV-Board Schematic Diagram



TY-TB10AV/AVC
AV-Board Schematic diagram

8 Exploded Views & Replacement Parts List

8.1. Packing Exploded Views



8.2. Replacement Parts List Notes

Important Safety Notice

*Components identified by Δ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.*

RTL (Retention Time Limited)

Note: The marking (RTL) indicates that the Retention Time is Limited for this item.

After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.

Abbreviation of part name and description

1. Resistor

Example:

ERD25TJ104 \underline{C} 100KOHM, \underline{J} , 1/4W

Type Allowance

2. Capacitor

Example:

ECKF1H103ZF \underline{C} 0.01UF, \underline{Z} , 50V

Type Allowance

Type	Allowance
C : Carbon	F : $\pm 1\%$
F : Fuse	G : $\pm 2\%$
M : Metal Oxide	J : $\pm 5\%$
Metal Film	K : $\pm 10\%$
S : Solid	M : $\pm 20\%$
W : Wire Wound	

Type	Allowance
C : Ceramic	C : $\pm 0.25\text{pF}$
E : Electrolytic	D : $\pm 0.5\text{pF}$
P : Polyester	F : $\pm 1\text{pF}$
Polypropylene	G : $\pm 3\text{pF}$
T : Tantalum	J : $\pm 5\text{pF}$
	K : $\pm 10\text{pF}$
	L : $\pm 15\text{pF}$
	M : $\pm 20\text{pF}$
	P : +100%, -0%
	Z : +80%, -20%

8.3. Mechanical Replacement Parts List

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	TBLG3108	FOOT RUBBER	2	CHAP.5.1.
	THEA068N	SCREW	4	
1	THEL0239	SCREW	9	CHAP.5.1.
	THTF011N	SCREW (PCB)	2	CHAP.5.2.
2	TKLA3101	MOUNT METAL	1	
	TKPB14101	FRONT PANEL	1	CHAP.5.3.
3	TKRA60501	CABLE COVER	1	
4	TPCB13163	CARTON BOX	1	TY-TB10AV
4	TPCB13164	CARTON BOX	1	TY-TB10AVC
5	TPDF1103	CUSHION	1	
6	TPEH354	POLY BAG (SET/COVER)	2	
7	TQE6691	POLY BAG	2	
8	TQZH839	INSTRUCTION BOOK	1	TY-TB10AV △
8	TQZH912	INSTRUCTION BOOK	1	TY-TB10AVC △
9	XMM41+16FJK	SCREW	2	
10	XMS31+16FJK	SCREW	2	
	XTV3+10GFJK	SCREW (REAR TERMINAL)	3	CHAP.5.1.
	XTV3+8GFJ	SCREW (FRONT)	4	CHAP.5.3.
11	XZBT6506	POLY BAG	1	

8.4. Electrical Replacement Parts List

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
JK3301	K2HA306B0048	JACK	1	
JK3303	K2HA204B0097	JACK	1	
JK3304	K1CB106B0027	CONNECTOR	1	
JK3305	K1QBB1AB0008	CONNECTOR	1	
JK3306, 07	K2HA204B0176	JACK	2	
JK3308	K1CB106B0027	CONNECTOR	1	
JK3309	K2HC103B0105	JACK	1	
JK3310	K1FB115BA020	CONNECTOR	1	
JK3311	K2HC103B0105	JACK	1	
JK3312	K1FB115BA020	CONNECTOR	1	
	TNPA4278	CIRCUIT BOARD AV	1	△